

What is claimed is:

1 1. An apparatus for acquisition of a direct-sequence/code division
2 multiple access signal, which acquires a long code from a direct-sequence/code
3 division multiple access control channel signal, in which a common short code, and
4 the long code are transmitted within one frame, and a group identification code
5 indicating a code group, to which a base station belongs, are combined and
6 transmitted with the common short code comprising:

7 a long code masking correlation portion for correlating common short codes
8 generated internally and the control channel signal;

9 a differentially coherent combining portion for deciding whether acquisition of
10 the common short code is achieved or not by multiplying a complex conjugate value
11 of previous output of the long code masking correlation portion by present output of
12 the long code masking correlation portion and by accumulating the results of
13 multiplication during the predetermined times and by taking an absolute value of the
14 accumulated value;

15 a code group and frame timing acquisition portion for acquiring the code
16 group and frame timing by correlating each group identification code, which can be
17 generated according to the coherence of the common short code, and the received
18 group identification codes respectively, and by combining each correlation result;
19 and

20 a long code acquisition portion for acquiring the long code by correlating the
21 long codes belonging to the acquired code group and the received long code
22 respectively.
23

1 2. The apparatus of claim 1, wherein the long code masking correlation
2 portion is a matched filter correlator comprising a plurality of taps whose tap
3 coefficients are the common short codes generated internally.

1 3. The apparatus of claim 2, wherein the differentially coherent combining
2 portion comprises:

3 a complex conjugator for taking the complex conjugate of the output of the
4 matched filter correlator;

5 a multiplier for multiplying the previous output of the complex conjugator by
6 the present output of the long code masking correlation portion;

7 an accumulator for accumulating the outputs of the multiplier;
8 an absolute value calculator for taking the absolute value of the outputs of the
9 accumulator; and
10 a discriminator for deciding whether acquisition of the common short code is
11 achieved or not from the outputs of the absolute value calculator.

1 4. An apparatus for acquisition for a direct-sequence/code division
2 multiple access signal, which acquires a long code from a direct-sequence/code
3 division multiple access control channel signal, in which a common short code and
4 the long code are transmitted within one frame, and a group identification code
5 indicating a code group, to which a base station belongs, are combined and
6 transmitted with the common short codes comprise:

7 a long code masking correlation portion for correlating common short codes
8 generated internally and the control channel signal;

9 a switch for connecting each output of the long code masking correlation
10 portion to output terminals which exist as many as the number of chips of the
11 common short code, and repeating this process;

12 a differently coherent combining portion for deciding whether acquisition of
13 the common short codes is achieved or not, by comparing values output from a
14 means wherein the means delays a value input from the output terminal connected
15 to the switch for a predetermined time, takes a complex conjugate of the delayed
16 value, multiplies the complex conjugated value by the value input from the output
17 terminal, accumulates the multiplied value for a predetermined times and takes an
18 absolute value of the accumulated value;

19 a code group and frame timing acquisition portion for acquiring the code
20 group and frame timing by correlating each group identification code, which can be
21 generated according to the coherence of the common short code, and the received
22 group identification codes respectively, and by combining each correlation result;
23 and

24 a long code acquisition portion for acquiring the long code by correlating the
25 long codes belonging to the acquired code groups and the received long code
26 respectively.

1 5. The apparatus of claim 4, wherein the long code masking correlation
2 portion is a matched filter correlator comprising a plurality of taps whose tap
3 coefficients are the common short codes generated internally.

1 6. The apparatus of claim 4, wherein the differentially coherent combining
2 portion comprises:

3 a plurality of delays which delay the value inputted from the output terminal
4 connected to the switch for the duration of the slot;

5 a plurality of complex conjugators which take the complex conjugate of the
6 outputs of each delay;

7 a plurality of multipliers which multiply the output of each complex conjugator
8 by the value inputted from the output terminal;

9 a plurality of accumulators which accumulate the output of each multiplier;

10 a plurality of absolute value calculators which take the absolute value of the
11 output of each accumulator; and

12 a discriminator which decides whether acquisition of the common short code
13 is achieved or not, comparing the outputs of the absolute value calculators.